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ABSTRACT

A framework for student Internet writing projects is proposed that consists of learning outcome goals and component activities. The framework is intended to be useful when designing and developing Internet writing projects and when evaluating student outcomes. Six learning goals are outlined: (1) engagement; (2) consideration of purpose and audience; (3) evaluation and synthesis of information; (4) developing personal standards for writing; (5) cultural awareness; and (6) participation in a literate community. Seven component activities are also outlined: (1) publishing; (2) friendship exchanges; (3) data sharing; (4) collaborative artifact creation; (5) peer critiquing; (6) mentoring; and (7) question asking. The paper shows how the framework could be applied to a pilot project in which students sent questions to African respondents via e-mail, used the replies in revisions of invented "folktales," and published the final stories on the Web. Through this example, the paper shows how a framework of activities and goals can highlight multiple facets of Internet writing projects and complex patterns of student outcomes. (Contains 4 tables and 40 references.) (SLD)

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Evaluating an Intercultural Internet Writing Project Through a Framework of Activities and Goals

Paper presented at the annual meeting of the
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April, 1998

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Abstract

We propose a framework for student Internet writing projects that consists of learning outcome goals and component activities. The framework is intended to be useful when designing and developing Internet writing projects and when evaluating student outcomes. We outline six learning goals (engagement; consideration of purpose and audience; evaluation and synthesis of information; developing personal standards for writing; cultural awareness; and participation in a literate community) and seven component activities (publishing; friendship exchanges; data sharing; collaborative artifact creation; peer critiquing; mentoring; and question asking). We show how the framework can be applied to a pilot project in which students sent questions to African respondents via e-mail, used the replies in revisions of invented "folktales," and published the final stories on the Web. Through this example, we show how a framework of activities and goals can highlight multiple facets of Internet writing projects and complex patterns of student outcomes.

Introduction

This paper began as an evaluative report of an Internet writing project that we piloted in the spring of 1997. In this project, a small group of ninth grade students involved in an interdisciplinary unit on Africa wrote invented "folktales," used e-mail to ask questions of African respondents, revised their stories based on the replies they received, and published the stories on the World Wide Web. The project was, for us, a way of exploring several of the ways the Internet can be used in student writing activities -- for acquiring information, communicating with people in different parts of the world, and for publishing students' work.

As we began to reflect on the project, however, it became clear that evaluation would be very tricky. Different students seemed to have success with different aspects of the project, and moreover, the most tangible outcomes of the project -- i.e., the written stories -- did not seem to reflect the students' experiences very well. Take, for example, the case of Pete.[1] Pete showed many of the attitudes and outcomes that we had hoped to foster with this project: he had great enthusiasm for the assignment, he thought about his audience, he carefully read the replies to his letter, and he seemed to learn something new about Africa. Despite this, his revised story was *less* rich in detail than his first draft. An evaluation based solely on Pete's written products would have missed all of his successes. On the other hand, other students had better final stories but did not consider their audience, for example, or think seriously about the replies to their letters.

We needed a way of pulling apart the different aspects of the project so we could look at the component activities and the outcome goals that go with them. We also realized that while the folktales project was unusual in its particular combination of elements, many Internet writing projects crossed boundaries in this way. The way we tackled this problem was to situate the project within a preliminary framework of activities and goals for writing on the Internet. We believe that frameworks like this can be a useful way for teachers and researchers to think about complex Internet projects when they are being designed and evaluated. In this paper, we will first outline our proposal for a framework, and then we will use the "folktales" project as an illustration of how the framework could be applied to actual student activities.

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[1] All student names are pseudonyms.

I. A framework of activities and goals for Internet writing activities

Activities involving writing on the Internet have been evaluated in various ways. Some studies have counted messages or groups of messages, associating a high level of use with a certain a measure of success (Guzdial, 1997; Riel, 1996). Other studies have classified message content, noting the relative proportions of different types of messages (e.g., Palmquist, 1993). Still other studies have compared final artifacts of students in different conditions (e.g., classes using networks to communicate with peers vs. more traditional classrooms), using overall writing quality as an outcome measure (e.g., Cohen & Riel, 1989).

A problem when deciding on evaluation criteria is the range of learning goals that can be connected to Internet writing activities. (By "goals" we mean learning outcomes that curriculum designers and teachers intend to be implicit in the task, rather than goals that students personally construct for themselves.) Typical goals for writing curricula include basic writing skills; the ability to write in ways that take into account content, purpose, and audience; the use of critical standards for one's own and others' writing; and engagement in "authentic" or "real-world" writing tasks. In addition to these, the teaching of written composition can explicitly or implicitly carry goals such as personal growth and self-discovery (e.g., Elbow, 1968); transformation of knowledge into more sophisticated understandings (e.g., Bereiter & Scardamalia, 1987); entry into a community of literate citizens (e.g., Delpit, 1995); and even the promotion of social awareness aimed at societal change (e.g., Berlin, 1988).

Which goals are present in a particular activity depends, of course, on the instructional context of that activity. Since it is impossible to foresee every possible instructional context, we cannot say that certain activities will always match with certain outcome goals. However, by making a framework for matching activities and goals, we can create a basis for comparing the success of activities in different contexts.

We are not the first to try to categorize activities using the Internet. Riel and Harasim (1994) divided Internet activities into two large categories, *collaborative*

network learning and *information retrieval*. Collaborative network learning includes *cross-classroom collaboration; teleapprenticeships* (e.g., e-mail mentoring); *telepresence* (participation in remote live events or simulations); *professional development* (online communication and support for teachers); *online course delivery;* and *distance teaching*. Information retrieval includes just two categories, *databases and archived information*, and *human information sources* (e.g., question-and-answer services). Harris (1995) divided Internet activities slightly differently, making three large groups: *collaborative problem-solving projects* (e.g., information searches, group simulations, and social action projects); *information collections* (e.g., collaboratively created databases and electronic publishing); and *interpersonal exchanges* (e.g., telementoring, e-mail exchanges, and Q & A services). Neither of these categorizations distinguishes sharply between activities that students do, such as e-mail exchanges, and artifacts that the students use, such as databases.

In this paper we present our own categorization, which has three characteristics. First, it is limited to Internet writing activities. Second, its purpose is to be not simply a way to label activities but a way to separate out different aspects of complex projects. Third, it is a way to match activities with learning goals, and therefore our framework includes two dimensions, one for activities and one for goals.

Based on the general categorizations of Internet activities described above, and published descriptions of Internet writing activities, we have come up with a framework that includes six learning goals and seven activity forms. The learning goals are meant to fit with traditional goals of writing instruction as well as the special affordances of the Internet. The categorization of activity forms aims to cover most of the activities involving writing on the Internet that currently occur in K-12 classrooms. Of course, we do not presume that these are definitive categories, but rather a working draft that will help us get started.

Goals

Since ultimately it is the goals that should drive an activity, we will start with the goals. Each of the goals below has been connected to the educational potential of the Internet in some way, and we include some of those connections in the descriptions.

Engagement (Increasing engagement in writing). A common justification for many Internet writing tasks is that they can lead to increased student engagement. Usually this kind of assertion is connected to the idea that Internet writing activities are relatively "authentic," in that students are more likely to do things similar to what professional writers do, e.g., gather information, obtain reactions from peers or knowledgeable outsiders, and publish for a wide audience.[2] These kinds of "authentic" activities are, in turn, considered to be related to increased engagement (Blumenfeld et al., 1991; Brown, Collins, & Duguid, 1989; Hudson, 1988; Koschmann, Myers, Feltovich, & Barrows, 1994). Engagement can be defined in many ways, and a full discussion is beyond the scope of this paper. For the "folktales" activity, we considered motivation and cognitive effort to be two separate components of engagement. It is also important to note that "authentic" activities can, in fact, be both boring and cognitively unengaging, and that the task itself is only one factor that can influence student engagement.

Purpose/Audience (Communication that takes into account content, purpose and audience). In a socially-oriented view of written communication, a writer's concept of audience is the key factor in the design of written messages (O'Keefe & Delia, 1988). More generally, awareness of purpose and audience are also important in students' development of metacognitive skills and strategies (Brown, 1988). The authenticity of the Internet also makes it a potentially good place for writing that is created in a certain genre for a specific purpose and audience. The content and purpose of writing in traditional classrooms can be constrained by the artificiality of teacher-centered tasks (Hudson, 1988), but the Internet can provide a way to engage in tasks that have content, purpose, and audiences in the "real world." Cohen and Riel (1989) found that students asked to write to peers in another country (over a network) produced better essays than students asked to write similar essays for their teacher.

Evaluate/Synthesize (Collecting, analyzing, evaluating, and synthesizing information meaningfully). Writing assignments often involve collecting, analyzing, evaluating, and synthesizing information on one topic or another, with

[2]We put forward this definition of authentic activities because it fits well with the affordances of the Internet; however, this is not a universally accepted definition. For example, Myers (1992) argues that "authentic literacy events" are defined not by the content of the activity itself, but by how much an individual, acting in a particular social context, values the experience.

the written product used as evidence of how well each of these was done. The writing process in itself can also be seen as hinging on analysis and synthesis of information. Bereiter and Scardamalia (1987) have defined sophisticated writing as "knowledge transforming" -- essentially a process of reworking one's knowledge and ideas as one creates and revises a text. Many teachers and researchers have looked to the Internet as a source of diverse information that can be used to challenge students to analyze, evaluate, and synthesize more effectively (e.g., Bell, Davis, & Linn, 1995).

Personal Standards for Writing (Developing one's own critical standards for writing). Students do not develop critical standards for their writing merely by individual practice, and two techniques for developing these standards have implications for Internet activities. The first, peer response groups, is an idea that has been tried within classrooms for many years, with mixed results (Neuwirth & Wojahn, 1996). On-line tools such as the Collaboratory Notebook (Edelson, Pea, & Gomez, 1996) or CSILE (Scardamalia, Bereiter, & Lamon, 1994) may be useful for creating more constructive situations for peer response, since they can provide structure for responses and visible representations of each student's thinking. A second technique, mentoring by older students, is a natural match for the Internet, since it allows mentors to respond from a distance and on a flexible schedule (e.g., Duin, Lammers, Mason, & Graves, 1994).

Awareness (Developing social and cultural awareness). Writing as a way of becoming more socially aware and broad-minded is an idea that has been well established by critical theorists who advocate "critical teaching" in writing classes (Berlin, 1988; Knoblach & Brannon, 1993). The use of technology toward these goals is much less established; however, changes in social attitudes are often a desired outcome of intercultural writing exchanges. Bonk and his colleagues have argued that electronic communication tools can support "perspective taking," and thereby help students to move to higher stages of social cognition (Bonk, Appleman, & Hay, 1996; Sugar & Bonk, 1995). In a study of classrooms using the Internet for communication, Garner and Gillingham (1996) looked at a year of written correspondence between elementary school students in a Yup'ik Eskimo village in Alaska and peers in Joliet, Illinois, and concluded that as a result of the exchanges, cultural stereotypes were dispelled on both sides. Since it is easy to send messages quickly across great distances, it is natural to hope that the Internet could be used to

increase cultural sensitivity. However, social awareness and cultural sensitivity are extremely personal and complex matters, and measuring student improvement is a thorny challenge.

Community (Participating in an authentic literate community). In the past decade, many researchers have stressed the importance of communities for all kinds of learning (e.g., Brown & Campione, 1994; Collins, Brown, & Newman, 1989; Lave & Wenger, 1991). In written communication, the relationships between writer, reader, and text have been seen as forming a "discourse community" (Rafoth, 1988). A community can be a means to some of the other goals outlined here, such as taking audience into account or developing critical standards, but it can also be a goal in itself. The idea of literacy itself can be seen as the ability to participate in the discourse of various communities (Bazerman, 1994). Using on-line tools to communicate with other classrooms or outside experts can be a way of bringing the community of the classroom into larger communities in the adult world (Brown & Campione, 1994).

Activities

We alluded to some of the activities in our discussion of goals, but below we have consolidated activity types into seven categories:

Publishing. Students put written work on the Internet (often the WWW) where it can be accessed by either the general public, or a specified group. The published work may be reports of their investigations, as in one project where students created reports on toxins found in rivers and put them on-line for use by other students (Bos, 1997). In other projects, students have used the Web as a place to publish creative writing, personal portfolios, or reviews of other Web sites.

Friendship exchanges. Students exchange messages as individual or group "pen pals." Students are often allowed to write on any subject, without pre-determined assignments or projects (Garner & Gillingham, 1996). Programs such as KIDCAFE have supported teachers and classrooms who in doing these kind of exchanges (Coleman, Sink, & Wilson, 1994).

Data sharing. Students working on similar projects post data they have collected to a central place, where they can read other students' data. For example, in Kids as Global Scientists (Songer, 1996), students exchange local meteorological information as they track world weather patterns. Another example is the River Rouge project in Detroit, where students measure the water quality at points in the river near their schools and post the measurements to a common web site.

Collaborative artifact creation. Students make different contributions to a common artifact. The Internet is used to collect the various pieces, or to coordinate the collaborative process (Riel, 1996). For example, in one project students in America, Canada, and Japan worked together to create an "adventure game" on the Web (http://www.vc97.attjens.co.jp/VC_39/). A different kind of collaborative activity can happen in "MOO"s -- on-line environments where participants can "build" parts of a "world" by writing and uploading small computer programs. Among the multitude of MOOs is Diversity University, a MOO devoted to the theme of English writing (Harris, 1996).

Peer critiquing. Students read and respond to other students' written work on the Internet. Peer critiquing has been used for years in writing classrooms (Gere & Stevens, 1985), but recently the Internet has begun to be used as a medium for exchanging texts and critiques. To date, most of these experiments have happened in college writing classes (Mabrito, 1991; Palmquist, 1993), but our current work involves experiments with using the Internet for peer critiquing in K-12 classrooms.

Mentoring. Students use e-mail or other messaging systems to obtain advice and help from a distant tutor. Many different types of tutor-student relationships have been called mentoring, but a conservative definition of mentoring implies an extended personal relationship, as opposed to a one-time exchange of messages. Mentors may help students directly with writing skills (Duin et al., 1994), as a personal confidante and advisor (Heath & Branscombe, 1985), or even as a partner in a role-playing activity (Weisserman, in preparation).

Question asking. Students seek new information by directly asking one or more "experts." As opposed to mentoring, no extended personal relationship is implied. The most common example of this are "ask the scientist" websites. However, the expert does not necessarily have to be an adult or a professional. Kupperman, .

Wallace and Bos (1997)noted an instance where an American high school student wrote to Israeli teenagers to find out about the assassination of Yitzchak Rabin. This case was clearly different from a friendship exchange, since the objective was clearly to get information and the relationship was not continued beyond a single letter.

Depending on how an activity or project is structured and enacted, it may include several activity types, each with one or more goals. One can chart the activity in a table to give an overview of activity types and goals. For example, a chart of our pilot activity (which we will explain in detail later) would look like this:

Table 1

Activities and goals for a pilot Internet writing activity

Goals / Activity type	Engagement	Purpose/Audience	Evaluate/Synthesize	Personal standards	Awareness	Community
Publishing	x	x				
Friendship exchanges						
Data sharing						
Collaborative artifact creation						
Peer critiquing						
Mentoring						
Question asking	x		x		x	

II. An evaluation of an intercultural Internet writing activity

The following is an evaluation of a pilot project we conducted in the spring of 1997. We include it in this paper as a way to illustrate how a framework such as the one outlined above can provide a basis for identifying different elements of an Internet writing activity so that they can be evaluated separately. This particular activity combined publishing and question-asking, and had four of the learning goals described above: engagement, purpose/audience, evaluation/synthesis, and awareness. We will not give a detailed analysis of student behavior during the activity, but rather we will provide an outline of outcomes related to the four goals. Our point is to illustrate how an evaluation based on a framework of goals and activities can highlight multiple types of outcomes in Internet writing projects.

The project

This pilot project was conducted in the spring of 1997 with 5 ninth grade students at a large, middle-class public high school. The students were part of an "interdisciplinary block" of 83 students and three teachers who coordinated instruction in earth science, social studies, and language arts. In February, 1997, the students studied Africa in all of their interdisciplinary block classes. In language arts class during this time, they studied folk tales in the African tradition, under the direction of a student teacher. The culminating assignment of the unit in language arts class was to write an invented folk tale of any kind (not necessarily related to Africa).

Five students (all European Americans) volunteered to work with the first author of this paper on an independent study project related to their folk tale assignment. All students in the interdisciplinary block were required to do at least two independent study projects during the year, and this project counted as one of those. Each student met individually with the first author to discuss and plan their work for the project. Students worked on the project primarily with the first author, with no formal instruction from their regular language arts teacher.

Each student was presented with the task of revising their folk tale so as to have a richer setting grounded in an African country. As a way of getting information that would help them do this, each student was asked to write a brief letter to several

respondents, who either lived currently in that country or who had grown up there. After the student had received responses and made revisions, the final stories were published on the World Wide Web. Communication between the students and the respondents was done through e-mail and facilitated by the first author, who ahead of time had located the respondents through searches on the Web. Students who had not chosen a specific African setting in their original folk tale were steered toward countries with a high number of potential respondents on the Web. Each student's letter was sent to three or four respondents, and each student received two or three replies.

Viewed through the framework of activities and goals laid out above, the project was a combination of two types of activities: publishing (making a document to be put on the Web) and question-asking (gathering information through letter writing). The publishing aspect had two aims: (a) to increase the students' engagement (meaning both motivation and intellectual effort) with the task through the public display of their writing, and (b) to give the students an authentic purpose and audience for their writing (meaning a purpose and audience somewhat resembling what a professional writer might have). The question-asking aspect also aimed to increase engagement through the personalized nature of the letter-writing, and it also had two more aims: (a) evaluation and synthesis of the information the students gathered through letter-writing, in the form of integrating this information into their revised story, and (b) increased cultural awareness (meaning a more sophisticated image of the country and culture that they chose), through direct contact with people of another culture. There were thus a total of four goals (engagement, purpose/audience, evaluation/synthesis, sensitivity) across two activities (publishing, question-asking). (See Table 1.)

Evaluation

To evaluate how well the four goals were met for each student, we created narrative summaries, focused on these goals, of what each student did during the project. The summaries used three sources of data: (1) the revisions made between the folk tales written for the original assignment and the final stories, along with each student's letter and responses; (2) post-hoc interviews with each of the students; and (3) notes from individual meetings with the students during the project. The summaries

were created by the two authors of this paper, and disagreements were resolved through discussion. From the summaries, we characterized each student's performance in terms of each of the four goals (see Tables 2 - 4). These characterizations were created inductively, through discussion between the two authors.

Below are the narrative summaries for each student. The text of each student's final story, along with his or her letter and responses, can be found on the Web at http://hi-c.eecs.umich.edu/umdl/stories97/index.html

Narrative Summaries:

1. Lisa

Lisa's original story, "How Earrings Came to Be," involved a woman who worked in a shoe factory, and her daughter who collected rocks. The mother was losing her hearing because of the noise in the factory, but one day the daughter gave her mother beautiful rocks that improved her hearing when she hung them on her ears. The rocks became fashionable, thus the invention of earrings.

Lisa's story was not set in any particular country, and she expressed no preference when deciding on a country for the project. At the suggestion of the first author, she finally chose Egypt. In her letter, Lisa asked eight different questions, including what a loud work environment in Egypt might be, what kind of housing there is, who wears earrings and what kind, and what children do for fun. Three Egyptians responded to her letter with a variety of information, so that Lisa ended up with two or three different answers to each question.

In her revision, Lisa changed or added details in nine places, picking and choosing from the information in the responses to her letter. Her choices of what to include seemed to be based on the logic of her story, as well as personal reactions to the information. For example, one of the responses referred to large, heavy earrings that the writer called "suspension earrings." Lisa included this detail in her revision, and when asked why said, "I just thought that ... cause they said that wealthy people wear really long earrings, he said that they were really long, I thought that was cool."

Overall, Lisa expressed positive affect toward both the publishing and the question-asking aspects of the project, saying that it was "cool to have something that I wrote on the Internet," and "whenever I went to class ... it was fun seeing if ... I got a letter." She had only a vague notion of who might read her story, but she said that knowing people were going to see it, she put extra effort into it "cause I didn't want it to be stupid."

Lisa's image of Egypt seemed to have changed somewhat, though she had trouble pinpointing exactly how. She told us:

> Lisa: Before... I thought it was, like, scary -- well, it wasn't scary, it was just, I didn't know much about it.... I imagined it a lot different from the United States.
> Interviewer: And now?
> Lisa: But it doesn't sound *that* different.

2. Jean

Jean's original story was "Why Monkeys Like Bananas." Set in a generic jungle, it was about how a trickster monkey uses a banana to trip up other animals who, angry at his tricks, ganged up to chase and capture him. Like Lisa, Jean had no particular setting for her original story and no strong opinion about which country to choose. After some discussion, she decided on Nigeria, reasoning that it was likely to have a jungle.

Jean's letter focused on one thing, confirming if the setting of her original story was accurate. She asked if there is there a jungle in Nigeria, about the animals that live there, and if there are banana and coconut trees, which played a key role in her story. The three responses she received gave contradictory information; for example, one of the letters said "there isn't really a jungle in Nigeria," while two of the letters said there are. Despite the narrow focus of Jean's questions, the respondents provided a range of information, including general facts about Nigeria and additional resources for finding out more about the country. One response mentioned a "legendary" creature called a "bush baby."

The mention of the bush baby became the basis for Jean's revision, which consisted of changing the main character from "Monkey" to "Bush Baby." The story line remained unchanged, and substantial changes in the text were confined to the beginning paragraph, where the main character is introduced, and the ending, where "ever since, Monkey has had a banana with him wherever he goes," became "Ever since, [Bush Baby] has been a legend." Choices between conflicting information were resolved by majority rule. Jean told us, "[the respondents] had ... conflicting answers, so I just chose whichever ... more people [agreed on]."

Jean showed mild enthusiasm for the project, but admitted that one of the reasons she liked it was that "it didn't take as much time" as some other independent study projects. (Jean estimated that she spent a total of only about two hours on the assignment.) Her idea of who might read the stories on the Internet was limited to "the people that answered [my] questions," and friends and relatives. Jean's report of the knowledge she gained from the letters was equally limited. Despite the fact that one of the letters talked specifically about the people and history of Nigeria, she reported that she learned only "the kind of animals that live there" and "what the land is like" -- the answers to her own questions. Jean also reported that her image of Nigeria did not change, since previously "in seventh grade somebody came in from Nigeria and talked to us about it." However, she thought that writing letters was, at least theoretically, a good way to learn about another country: "I think it's a lot better if you talk to people first hand than just read about it in a book, cause it's... more interesting. And it's more like it's 'real.'"

3. Pete

Pete's engagement with the activity was quite idiosyncratic and striking. Unlike the other students in the project, Pete's original story already contained a fairly rich setting in Egypt and Africa. The story was a myth-like tale of a dying Egyptian king whose spirit leaves earth and travels to a distant planet in the constellation of Orion.

Pete's letter was also unusual in that he included the original story and asked if the story and setting were "realistic" to Egypt and the thinking of Egyptians. He received

two responses, one saying that "the setting is quite realistic to my homeland," and one saying that "the setting is NOT realistic to my country." The respondents also disagreed on whether the idea of reincarnation reflected traditional Egyptian beliefs.

Pete's revisions were unexpected: He left the story line the same, but cut out all references to Egypt and Africa. When asked about this, he responded that he was trying to make the story more accurate and specific to Egypt. Pete said that he was happy that the respondents gave him "feedback of what ... wasn't similar to their culture," and he was "glad that they were honest about it, and they gave me a chance to fix any errors or anything I made about their culture." Evidently, the negative comments made more of an impact on Pete than the positive ones. However, when asked about the contradictions between the two responses, Pete attributed it to regional differences. "I believe they probably live somewhat separate, or they're living someplace different in Egypt, so I kind of figured it's just normal, it's just the way -- how culture is." Pete's conclusion about modern Egypt was very similar to Lisa's: "...When I look at it now it looks like it would be just any other city in the United States. That Cairo's pretty similar here to Detroit, New York, or any other."

Of all the students in the project, Pete showed the most enthusiasm for having his story on the Web. He identified himself as a writer, saying that "I've always wanted to be known somewhat to the world." When asked who might read his story, he replied,

> Probably people who are poets... or small business publishing companies, hopefully (laughs). Probably those who are trying to get ideas for if they are writing a story or writing a poem ... if they get writer's block and just need some ideas.

4. Ben

Ben's original folk tale was a brief, bizarre story about the origin of the hot dog, with cities of dogs and cats, refrigerators, and raining frankfurters. Ben chose Nigeria for his setting, saying that he had met an exchange student from there once, and that he knew Nigeria had a good soccer team. He thought Nigeria "seemed nice," with "no rebellions."

Ben's letter was very short, asking "what was life like up there," if it was warm, if the respondent played soccer, and if he lived in Lagos. The three responses he received answered these questions with a variety of details about daily life, sports, weather, cities, and the economy in Nigeria. At first Ben resisted making any changes to his story, adding only the two words "in Nigeria" to the introductory sentence. However, after some prodding, Ben added seven sentences to his story, using information from the responses almost arbitrarily as background detail for the story.

Although Ben needed some pressure before he put effort into the project, he said he chose to do it because "it sounded kind of interesting to have your own site, where other people could read your stories, and ... I thought it might be interesting to read letters from that country." His idea of who might read the stories was vague, but one thing that made an impression on him was reading comments on Web-published stories done for a similar project the previous year. Some of that year's comments struck Ben as critical, and he said, "I guess it made me think about writing a better story."

Ben claimed that as a result of the project, his image of Nigeria became more positive. He was impressed by descriptions of fruit trees and soccer games, and somehow got the impression that parts of Nigeria were "like Beverly Hills or something."

5. Kathy

Kathy was overall the least engaged with the project, and even asked to drop the activity in the middle, claiming she had no time to finish it. Her original folk tale was a straightforward story which can be summed up by its final line, "So every time it rains and you hear thunder it is really the gods bowling." Kathy chose Kenya for her setting because she "used to have a pen pal" from there. However, she said she had no particular image of the country.

Kathy's letter to Kenyan respondents asked about Kenyan names, if there is bowling in Kenya, and if there are any traditional Kenyan folk tales about thunder. Two respondents answered Kathy's letter, but through communication mistakes within

the school, only one letter reached her at the appropriate time. The one letter consisted mainly of a list of Kenyan names, leaving Kathy with no answers to her other questions. Instead of revising her story, Kathy wrote an entirely new story about the origin of hail, using two Kenyan names but otherwise no connection to Africa. Kathy explained that she tried to revise her first story, but "I ... wrote it out, but it didn't make any sense, like you could tell it didn't come out right when I wrote it down, so I took another natural occurrence and just wrote another one on it.

Not surprisingly, considering Kathy's minimal involvement with the project, she did not seem to gain much new knowledge of or affect toward Kenya. In her follow-up interview, she made one vague reference about a famous Kenyan that shared a name with one of her characters, but otherwise her answers to questions about her knowledge or image of Kenya were all noncommittal.

Characterizations of student performance:

Using the narrative summaries above, we characterized each student's performance for each activity and each goal. We tried to use language that both adequately represented our interpretation of the individual students' work, and allowed for comparison across students. We characterized *engagement* in terms of the levels of motivation and apparent effort (Table 2); *purpose/audience* in terms of the student's perception of the story's audience (Table 3); *evaluation/synthesis* in terms of the student's method for integrating new information (Table 4); and *awareness* in terms of changes in the student's image toward the country they had chosen (also Table 4).

The characterizations are not meant to be precise reflections of established psychological constructs, nor are they meant to represent the entire spectrum of possible student behaviors. Rather, they should be seen as suggesting foci for classroom evaluation and directions for more detailed research. Some of these directions are mentioned in the last section of this paper.

Table 2

Outcomes for both publishing and question-asking goals

Student	Engagement
Lisa	High motivation (both publishing and question asking important), moderate effort
Jean	Moderate motivation, low effort
Pete	High motivation (publishing most important), moderate effort
Ben	Moderate motivation, low effort
Kathy	Low motivation, low effort

Table 3

Outcomes for publishing goals

Student	Purpose/Audience
Lisa	Vague audience (but "didn't want to look stupid")
Jean	Audience limited to friends and family
Pete	Audience of other writers
Ben	Vague audience (but wanted to avoid negative criticism)
Kathy	Little attention to audience

Table 4

Outcomes for question-asking goals

Student	Evaluation & synthesis	Awareness
Lisa	Picked and chose information based on story logic and personal preferences	New image of Egypt as less strange, scary; more similar to the U.S.
Jean	Conflicts of information resolved by "majority rule"	No change
Pete	Eliminated all controversial information	New image of Egypt as more similar to the U.S.
Ben	Picked and chose information almost arbitrarily	New image of Nigeria more positive
Kathy	Used virtually no new information	No change

Discussion

The framework of activities and goals we have chosen for evaluating this pilot study brings out a highly heterogeneous picture of the students' work. What is most striking about the results are the individual differences in every category. In terms of engagement, purpose/audience, and awareness, it could be said the that educational goals were met to some degree for some students. None of the students was challenged to a high level of evaluation and synthesis, though here again there was a wide range of what the students actually did. By emphasizing certain goals and examples over others, it would be possible to portray this project as either a success or a failure.[3] Instead, it is evident that a complex activity such as this can result in very diverse patterns of behavior among individual students.

Another notable outcome is that the most tangible products -- the students' revisions of their stories -- were not good indicators of how well each of the goals was met. For example, Pete showed high engagement, had a vivid concept of his audience, and claimed to have learned something about Egypt; however, his final story reflected none of those things. On the other hand, Jean's final story could be seen as meeting the original criteria of creating a folk tale with a rich setting grounded in Africa; but she showed very limited benefit from the publishing and question asking aspects of the project. Her story, and her knowledge about Nigeria, seemed unaffected by her correspondence. A third example of the inadequacy of the final story as a primary outcome measure is Kathy, whose original and revised stories were both adequate pieces of writing, but who seemed to have been the least engaged and to have benefited the least from the project.

In this paper we have not attempted a full analysis of why students met or failed to meet the goals embedded in the activity. However, using a framework to break down an activity, as we have done, can suggest directs for more in-depth research. For example, a focus on engagement would suggest attention to constructs such as motivation, metacognition, self-efficacy, task requirements, and accountability. Analysis of how students approach evaluation and synthesis would likely involve a model of cognitive processes and strategies. A focus on purpose and audience could

[3]Even the interpretation of what a particular goal means can affect the perceived success or failure of a project. For example, looking at "engagement" in this study, most of the students were moderately or highly motivated, but none showed a great deal of effort.

involve an examination of student goals and expectations, or alternatively, analysis of the students' participation in discourse communities delineated by both school and the Internet.

From an instructional perspective, these issues present great problems for teachers who need to evaluate students' work on Internet writing activities. Much of the evidence for evaluation in this study came from interviews, and it would clearly be unfeasible for a teacher to interview each student in several classes individually after a project such as this. Writing projects are usually assessed by the quality of the written product, but we need to devise methods of assessment that match more closely with a variety of learning goals. One way may be to devise rubrics for teachers to elicit information from students about their participation in and learning from Internet writing activities, without conducting a full scale interview. Using these in conjunction with final products and drafts, the teacher could develop a more complete picture of each student's work. It might also be possible to devise student self-evaluation tools which could aid the teacher in understanding how students participated in and benefited from Web publishing activities.

Better frameworks of activities and goals for writing on the Internet could assist teachers in developing projects and in assessing student activities. These frameworks should come not only from researchers, but from teachers and administrators who are creating and enacting Internet writing activities in their schools. Excitement about the possibilities of the Internet has led to activities that aim to fulfill multiple learning goals simultaneously. In designing activities, a framework can help insure that activities and goals are well-matched, and that assessments are appropriate to the goals. In particular, a framework can call attention to learning that is part of the desired goals but that is difficult to assess through traditional means. Common frameworks used by groups of teachers and researchers can also provide a basis for comparing different activities and applying successful practices across various situations. Through the deliberate use of well-articulated frameworks for design and assessment, we could learn much about how to use the Internet in ways that make sense for teachers and students.

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